

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Patel et al.

Serial No.: 10/060,109

Filed: January 28, 2002

For: METHODS AND COMPOSITIONS  
FOR TREATING A SUBSTRATE  
USING FOAM TECHNOLOGY



Group Art Unit: 1746

Examiner: To be assigned

Attorney Docket No.: 8317-0129-999

# 7

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents  
Washington, D.C. 20231

Sir:

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In accordance with the duty of disclosure provisions of 37 C.F.R. §1.56, there is hereby provided certain information which the Examiner may consider material to the examination of the subject U.S. patent application. It is requested that the Examiner make this information of record if it is deemed material to the examination of the application.

1. Enclosures accompanying this Information Disclosure Statement are:

- 1a. ☒ A list of all patents, publications, applications, or other information submitted for consideration by the office.
- 1b. A legible copy of :
  - ☒ Each U.S. patent application publication and U.S. and foreign patent;
  - ☒ Each publication or that portion which caused it to be listed on the PTO-1449;
  - ☐ For each cited pending U.S. application, the application specification including the claims, and any drawing of the application, or portion of the application which caused it to be listed on the PTO-1449 including any claims directed to that portion;
  - ☒ all other information or portion which caused it to be listed on the PTO-1449.
- 1c. ☐ An English language copy of search report(s) from a counterpart foreign application or PCT International Search Report.
- 1d. ☒ Explanations of relevance (ATTACHMENT 1(d), hereto) or English language abstracts of the non-English language publications.
- 1e. ☒ Declaration of Bakul P. Patel, Robert J. Small, and Mihaela Cernat Under 37 C.F.R. § 1.132 (w/ Exhibits A and B).

2. ☒ This Information Disclosure Statement is filed under 37 C.F.R. §1.97(b):
  - ☐ Within three months of the filing date of a national application other than a continued prosecution application under §1.53(d);
  - ☐ Within three months of the date of entry of the national stage as set forth in §1.491 in an international application;
  - ☒ Before the mailing of the first Office action on the merits;
  - ☐ Before the mailing of a first Office action after the filing of a request for continued examination under §1.114.
3. ☐ This Information Disclosure Statement is filed under 37 C.F.R. §1.97(c) after the period specified in 37 C.F.R. §1.97(b), but before the mailing date of any of a final action under 37 C.F.R. §1.113, a notice of allowance under 37 C.F.R. §1.311 or an action that otherwise closes prosecution in the application.

*(Check either Item 3a or 3b)*

- 3a. ☐ The Certification Statement in Item 5 below is applicable. Accordingly, no fee is required.
- 3b. ☐ The \$180.00 fee set forth in 37 C.F.R. §1.17(p) in accordance with 37 C.F.R. §1.97(c) is:
  - ☐ enclosed
  - ☐ to be charged to Pennie & Edmonds LLP Deposit Account No. 16-1150.

*(Item 3b to be checked if any reference known for more than 3 months)*

4. ☐ This Information Disclosure Statement is filed under 37 C.F.R. §1.97(d) after the period specified in 37 C.F.R. §1.97(c), but on or before the date of payment of the issue fee.

The \$180.00 fee set forth in 37 C.F.R. §1.17(p) is:

- ☐ enclosed.
- ☐ to be charged to Pennie & Edmonds LLP Deposit Account No. 16-1150.

The Certification Statement in Item 5 below is applicable.

5. ☐ Certification Statement *(applicable if Item 3a or Item 4 is checked)*

*(Check either Item 5a or 5b)*

- 5a. ☐ In accordance with 37 C.F.R. §1.97(e)(1), it is certified that each item of information contained in this Information Disclosure Statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

- 5b. ☐ In accordance with 37 C.F.R. §1.97(e)(2), it is certified that no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the undersigned after making reasonable inquiry, was known by any individual designated in 37 C.F.R. §1.56(c) more than three months prior to the filing of this Information Disclosure Statement.
6. ☐ This application is a continuation application under 37 C.F.R. §1.60 or §1.53(b) or (d).
- (Check appropriate Items 6a, 6b and/or 6c)*
- 6a. ☐ A Petition to Withdraw from issue under 37 C.F.R. §1.313(b)(5) is concurrently filed herewith.
- 6b. ☐ Copies of publications listed on Form PTO-1449 from prior application Serial No. \_\_, filed on \_\_, of which this application claims priority under 35 U.S.C. §120, are not being submitted pursuant to 37 C.F.R. §1.98(d).
- 6c. ☐ Copies of the publications listed on Form PTO-1449 were not previously cited in prior application Serial No. \_\_, filed on \_\_, and are provided herewith.
7. ☐ This is a Supplemental Information Disclosure Statement. *(Check either Item 7a or 7b)*
- 7a. ☐ This Supplemental Information Disclosure Statement under 37 C.F.R. §1.97(f) supplements the Information Disclosure Statement filed on \_\_. A bona fide attempt was made to comply with 37 C.F.R. §1.98, but inadvertent omissions were made. These omissions have been corrected herein. Accordingly, additional time is requested so that this Supplemental Information Disclosure Statement can be considered as if properly filed on \_\_.
- 7b. ☐ This Supplemental Information Disclosure Statement is timely filed within one (1) month of a PTO Notice under 37 C.F.R. §1.97(i).
8. ☒ In accordance with 37 C.F.R. §1.98, a concise explanation of what is presently understood to be the relevance of each non-English language publication is:
- 8a. ☐ satisfied because all non-English language publications were cited on the enclosed English language copy of the PCT International Search Report or the search report from a counterpart foreign application indicating the degree of relevance found by the foreign office.
- 8b. ☐ set forth in the application.
- 8c. ☐ enclosed as an attachment hereto.
- 8d. ☒ contained as an English language abstract, attached hereto.

9. ☒ The Commissioner is authorized to charge any additional fee required or credit any overpayment for this Information Disclosure Statement and/or Petition to Pennie & Edmonds LLP Deposit Account No. 16-1150.
10. ☒ No admission is made that the information cited in this Statement is, or is considered to be, material to patentability nor a representation that a search has been made (other than a search report of a foreign counterpart application or PCT International Search Report if submitted herewith). 37 C.F.R. §§1.97(g) and (h).

Respectfully submitted,

Date

21 May 2002

Richard G. A. Bone

Richard G.A. Bone, Ph.D.  
Limited Recognition Under 37 C.F.R. § 10.9(b)  
(Copy of Certificate Enclosed)

for

Victor N. Balancia (Reg. No. 31,231)  
**PENNIE & EDMONDS** LLP  
1155 Avenue of the Americas  
New York, N.Y. 10036-2711  
(212) 790-9090

## LIST OF REFERENCES CITED BY APPLICANT

(Use several sheets if necessary)

ATTY. DOCKET NO.

8317-0129-999

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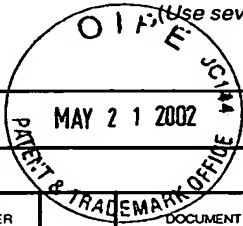
Patel et al.

FILING DATE

January 28, 2002

GROUP

1746



## U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	AA	3,592,773	Jul. 13, 1971	Muller		
	AB	4,395,479	Jul. 13, 1983	Ward et al.		
	AC	4,401,747	Aug. 30, 1983	Ward, Jr. et al.		
	AD	4,403,029	Sep. 6, 1983	Ward, Jr. et al.		
	AE	4,428,871	Jan. 31, 1984	Ward et al.		
	AF	4,508,591	Apr. 2, 1985	Bartlett et al.		
	AG	4,744,834	May 17, 1988	Haq		
	AH	4,770,713	Sep. 13, 1988	Ward		
	AI	4,781,764	Nov. 1, 1998	Leenaars		
	AJ	4,817,652	Apr. 4, 1989	Liu et al.		
	AK	5,129,955	Jul. 14, 1992	Tanaka		
	AL	5,181,985	Jan. 26, 1993	Lampert et al.		
	AM	5,334,332	Aug. 2, 1994	Lee		
	AN	5,560,857	Oct. 1, 1996	Sakon et al.		
	AO	5,563,119	Oct. 10, 1996	Ward		
	AP	5,571,337	Nov. 5, 1996	Mohindra et al.		
	AQ	5,571,447	Nov. 5, 1996	Ward et al.		
	AR	5,603,849	Feb. 18, 1997	Li		
	AS	5,630,904	May 20, 1997	Aoyama et al.		
	AT	5,645,737	Jul. 8, 1997	Robinson et al.		
	AU	5,672,577	Sep. 6, 1995	Lee		
	AV	5,705,089	Jan. 6, 1998	Sugihara et al.		
	AW	5,709,756	Jan. 20, 1998	Ward et al.		
	AX	5,792,274	Aug. 11, 1998	Tanabe et al.		
	AY	5,885,477	Mar. 23, 1999	Rasmussen et al.		
	AZ	5,972,862	Oct. 26, 1999	Torii et al.		

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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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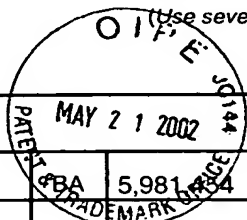
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GROUP

1746



BA	5,981,484	Nov. 9, 1999	Small			
BB	6,000,411	Dec. 14, 1999	Lee			
BC	6,048,406	Apr. 11, 2000	Misra et al.			
BD	6,090,217	Jul. 18, 2000	Kittle			
BE	6,117,783	Sep. 12, 2000	Small et al.			
BF	6,156,661	Dec. 5, 2000	Small			
BG	6,232,228 B1	May 15, 2001	Kwag et al.			
BH	6,235,693 B1	May 22, 2001	Cheng, et al.			
BI	6,248,704 B1	Jun. 19, 2001	Small et al.			
BJ	6,296,715 B1	Oct. 2, 2001	Kittle			

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## FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
	BK	WO 98/36045	Aug. 20, 1998	PCT				
	BL	WO 00/02238	Jan. 13, 2000	PCT				
	BM	EP 0 662 705 B1	Aug. 23, 2000	EPO				
	BN	63-239820	Oct. 5, 1988	JAPAN (w/English language abstract)				

## OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

	BO	Baklanov, et al., "Applicability of HF Solutions for Contact Hole Cleaning on Top of TiSi <sub>2</sub> ," Electrochemical Society Proceedings, Vol. 97-35, pp. 602-609 (1998)
	BP	Ireland, P.J., "High Aspect Ratio Contracts: A Review of the Current Tungsten Plug Process," <i>Thin Solid Films</i> , 304:1-12 (1997)
	BQ	Kittle et al., "Photoresist Residue Removal Using Aqueous foam Proof of Concept Experiments," Auguafoam, Inc. and EKC Technology, Inc., <a href="http://www.aquafoam.com/removalall.html">http://www.aquafoam.com/removalall.html</a> (accessed November 2, 2001).
	BR	Kittle, P., "Foam Wafer Cleaning Experimental Proof of Concept," Aquafoam, Inc., <a href="http://www.aquafoam.com/proof-11mb.html">http://www.aquafoam.com/proof-11mb.html</a> (accessed November 2, 2001).
	BS	Kujime, et al., "The Cleaning of Particles From Si Water Surface by Fluorine Solution Excited by Megasonic," Proceedings of the 1996 Semi. Pure Water and Chemicals, pp. 245-256 (1996)

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<b>LIST OF REFERENCES CITED BY APPLICANT</b> (Use several sheets if necessary)	ATTY. DOCKET NO.	APPLICATION NO.
	8317-0129-999	10/060,109
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BT	Lee, C. and Lee, S., "Effects of Plasma Treatments On The Erosion Of TEOS-PBSG Films by Chemical Etchants," Solid State Electronics, Vol. 41(6): 921-923 (1997)
BU	Liehr and Kasi, "HF and UV-Ozone Integrated Wafer Preclean: Chemistry and Effects on Thermal Gate Oxide," Extended Abstracts of the 1991 International Conference on Solid State Devices and Materials, pp. 484-486
BV	Ohman, L. and Sjöberg, S., "Equilibrium and Structural Studies of Silicon(IV) and Aluminum(III) in Aqueous Solution. Part 9. A Potentiometric Study of Mono- and Poly-nuclear Aluminum(III) Citrates," J. Chem. Soc. Dalton Trans., pp. 2513-2517 (1983).
BW	Råfols, et al., "Ionic Equilibria in Aqueous Organic Solvent Mixtures: The Equilibria of HF in an Ethanol + Water Mixture Used for Cleaning Up Semiconductors," J. Electroanalytical Chem. 433, pp. 77-83 (1997).
BX	Singer, P., "Wafer Cleaning: Making the Transition to Surface Engineering," Semi. International, pp. 88-92 (October 1995)
BY	Ueno et al., "Cleaning of CHF <sub>3</sub> Plasma-Etched SiO <sub>2</sub> /SiN/Cu Via Structures with Dilute Hydrofluoric Acid Solutions," J. Electrochem. Soc., vol. 144(7):2565-2572 (1997)

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